#33 GAU 12/15/99

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Alcino Resende de ALMEIDA

Appln. No. 08/859,353 Group Art Unit: 3753

Filed: May 20, 1997 Examiner: K. LEE

For: SEAT FOR GATE VALVE

RE-SUBMISSION OF REQUEST UNDER 37 CFR 1.607

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Per our telephone conversation of December 13, 1999, we are re-submitting herewith a Request Under 37 C.F.R. § 1.607 (Proposed Form PTO-850) and Translation of Brazilian Patent Application #PI 9300292-0.

Also enclosed herewith is a copy of a FILING RECEIPT, date stamped September 17, 1999, which shows that the above-mentioned documents were received on September 17, 1999. It will be noted that the above-mentioned Brazilian Patent Application is obviously misidentified as a "Portuguese Letters Patent" on the date stamped filing receipt.

Respectfully submitted,

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21

HAND CARRY TO EXAMINER K. LEE
GROUP ART UNIT: 3407

FILING RECEIPT
PLEASE DATE STAMP AND RETURN TO US - BOX 235X

In re application of

de ALMEIDA, ALCINO R.

Appln. No. 08/859,353

Group Art Unit: 3407

Filed: May 20, 1997

Examiner: K. LEE

For: IMPROVED SEAT FOR GATE VALVE

PAPER(S) FILED ENTITLED:

1. Request Under 37 CFR 1.607 (Proposed Form PTO-850 attached)
2. Translation of Portugese Letters Patent # PI 9300292-0

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DOCKET NO.: Q343671
ATTORNEY/SEC: EFK/cdk

Date Filed: September 17, 1999

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Alcino Resende de ALMEIDA

Appln. No. 08/859,353 Group Art Unit: 3407

Filed: May 20, 1997 Examiner: K. LEE

For: SEAT FOR GATE VALVE

REQUEST UNDER 37 CFR 1.607

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

An interference should be declared between the above-identified application and two patents.

37 CFR 1.607(a)(1)

The patents are US 5,707,214, issued January 13, 1998, and US 5,743,717, issued April 28, 1998. Both patents are assigned to Fluid Flow Engineering Company of Tulsa, Oklahoma and name as the sole inventor, Zelimir Schmidt. Hereinafter, US 5,707,214 is referred to as the Schmidt '214 patent, and US 5,743,717 is referred to as the Schmidt '717 patent.

37 CFR 1.607(a)(2)

Applicant proposes the following count, which is in the format approved by the Commissioner in Orikasa v. Oonishi, 10 USPQ2d 1996, 2003, (Comm'r 1990), and Davis v. Uka, 27 USPQ2d 1180, 1186-89 (Comm'r 1993):

PROPOSED COUNT

Claim 4 of the Almeida application

OR

Claim 1 of the Schmidt '717 patent or claim 7 of the Schmidt '717 patent or claim 11 of the Schmidt '717 patent or claim 1 of the Schmidt '214 patent or claim 2 of the Schmidt '214 patent or claim 3 of the Schmidt '214 patent or claim 4 of the Schmidt '214 patent or claim 5 of the Schmidt '214 patent.

37 CFR 1.607(a)(3)

All of the claims of the Schmidt patents, i.e. claims 1-18 of the Schmidt '717 patent and claims 1-5 of the Schmidt '214 patent, correspond to the proposed count.

37 CFR 1.607(a)(4)

The claims which correspond exactly to the proposed count are claim 4 of the Almeida application, claim 1, 7 and 11 of the Schmidt '717 patent, and claims 1-5 of the Schmidt '214 patent. Claims 2-6 are dependent from claim 1 of the Schmidt '717 patent, claims 8-10 are dependent from claim 7 of the Schmidt '717 patent, and claims 12-18 are dependent from claim 11 of the Schmidt '717 patent. These dependent claims 2-6, 8-10 and 12-18 of the Schmidt '717 patent fail to recite any recitations which would patentably distinguish these claims from the count or the claims from which they depend.

37 CFR 1.607(a)(5)

Claim 4 is the only claim in the Almeida application, and this claim 4 was present in this application previously. This claim 4 was submitted with an Amendment, filed July 27, 1998.

37 CFR 1.607(a)(6)

37 CFR 1.607(a)(6) does not apply, because claim 4 was presented within one year from the issue dates of both the Schmidt '717 patent and the Schmidt '214 patent.

37 CFR 1.608

37 CFR 1.608 does not apply, because the U.S. filing date of the Almeida application is January 26, 1994, and the Almeida application claims priority to a Brazilian application, filed January 27, 1993. Both of these dates are before the earliest filing dates of the Schmidt patents. The earliest filing date listed on the face of the Schmidt '214 patent is July 1, 1994, and the earliest filing date listed on the face of the Schmidt '717 patent is also July 1, 1994. Therefore, Almeida will be senior party in the interference.

PROPOSED FORM PTO-850

Attached hereto is a proposed form PTO-850 with attachments. A more detailed discussion of matters discussed therein is provided below.

37 CFR 1.609(b)(1)

A single count is proposed as follows:

COUNT 1

Claim 4 of the Almeida application

OR

Claim 1 of the Schmidt '717 patent or claim 7 of the Schmidt '717 patent or claim 11 of the Schmidt '717 patent or claim 1 of the Schmidt '214 patent or claim 2 of the Schmidt '214 patent or claim 3 of the Schmidt '214 patent or claim 4 of the Schmidt '214 patent or claim 5 of the Schmidt '214 patent.

In the proposed count, the "Almeida application" is U.S. Application Serial No. 08/859,353, the "Schmidt '717 patent" is U.S. Patent No. 5,743,717, and the "Schmidt '214 patent" is U.S. Patent No. 5,707,214.

37 CFR 1.609(b)(2)

All of the claims of the Almeida application, the Schmidt '717 patent and the Schmidt '214 patent correspond to the proposed count. These claims read as follows:

ALMEIDA APPLICATION CLAIM

4. An apparatus for controlling gas lift in an oil well having a casing with tubing concentrically disposed therein, said apparatus comprising a gas lift valve mounted on said tubing and having an inlet end in communication with a space between said tubing and said casing and an outlet in communication with an interior of said tubing, said gas lift valve consisting of a housing and a nozzle mounted in said housing, said nozzle having a continuously open passage through which gas is allowed to flow, wherein said passage consists of a curved inlet portion through which gas flow is speeded up, a smooth straight, intermediate portion providing a main restriction to gas flow and a smooth, outwardly tapered, conical shaped outlet portion through which said gas flow is gradually slowed down, reducing the gas pressure loss and rendering gas flow isoentropic.

SCHMIDT '717 CLAIMS

1. A device for controlling a flow of gas from an external source into well tubing to enhance lift of fluid in the tubing comprising:

a gas lift valve insertable in the tubing, said valve having a housing with an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis;

an orifice mounted within said housing mid-portion, said orifice having a throat transverse to and symmetrical about said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis and a Venturi extending downwardly from said throat and diverging symmetrically outwardly from said axis, said orifice defining a path of flow of gas from said upper portion to said lower portion of said housing;

said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, such that critical flow is achieved in said throat, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said housing through said continuous flow path, and out through said at least one outlet port into said tubing, and

a check valve means responsive to said flow of gas.

2. The device of claim 1 wherein said nozzle has an upper end with a cross-section parallel to a cross-section of said throat, said nozzle upper end cross-section having an area approximately 2.5 times an area of said throat cross-section.

3. The device of claim 1 wherein said nozzle has an upper end with a cross-section parallel to a cross-section of said throat, said nozzle upper end cross-section having an area at least 2.5 times an area of said throat cross-section.

4. The device of claim 1 wherein said Venturi diverges from said axis at an angle of

approximately 4 to 15 degrees.

5. The device of claim 1 wherein said Venturi diverges from said axis at an angle of approximately 6 degrees.

6. The device of claim 1 wherein said nozzle has a circular contour of equal radii greater than a diameter of said throat and having points of origin on a perimeter of a planar figure concentric about and in a plane common with said throat.

7. A device for controlling a flow of gas from an external source into well tubing to enhance lift of fluid in the tubing comprising:

a gas lift valve insertable in the tubing, said valve having a housing with an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis;

an orifice mounted within said housing mid-portion, said orifice having a throat transverse to and symmetrical about said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis in a circular contour of equal radii greater than a diameter of said throat and having points of origin on a perimeter of a planar figure concentric about and in a plane common with said throat and a Venturi extending downwardly from said throat and diverging symmetrically linearly outwardly from said axis, said orifice defining a path of flow of gas from said upper portion to said lower portion of said housing;

said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said housing through said continuous flow path, and out through said at least one outlet port into said tubing wherein a differential pressure between said nozzle first end and said Venturi second end is less than about 10%; and

a check valve means responsive to said flow of gas.

8. The device of claim 7 wherein said nozzle radii is approximately 1.5 to 2.5 times said throat diameter.

9. The device of claim 7 wherein said nozzle radii is approximately 1.9 times said throat diameter.

10. The device of claim 7 wherein said Venturi has a conical contour.

11. A device for controlling a flow of gas from an external source into well tubing to enhance lift of production fluid in the tubing comprising:

a gas flow valve insertable in the tubing, said valve having an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis; p1 an orifice mounted within said valve mid-portion, said orifice having a throat of circular cross-section taken in a direction transverse to said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis in a circular contour of equal radii greater than a diameter of said throat and having points of origin on a circle concentric about said axis and in a plane common with said throat cross-section and a Venturi extending downwardly from said throat and diverging symmetrically linearly outwardly from said axis, said orifice defining a path of flow of gas from said upper portion to said lower portion of said valve;

said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, such that critical flow is achieved in said throat, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said valve through said continuous flow path, and out through said at least one outlet port into said tubing; and

a check valve means responsive to said flow of gas.

12. The device of claim 11 wherein said nozzle has an upper end of circular cross-section parallel to said throat cross-section, said nozzle upper end cross-section having an area approximately 2.5 times an area of said throat cross-section.

13. The device of claim 11 wherein said nozzle has an upper end of circular cross-section parallel to said throat cross-section, said nozzle upper end cross-section having an area at least 2.5 times an area of said throat cross-section.

14. The device of claim 11 wherein said nozzle radii is approximately 1.5 to 2.5 times said throat diameter.

15. The device of claim 11 wherein said nozzle radii is approximately 1.9 times said throat diameter.

16. The device of claim 11 wherein said Venturi has a conical contour.

17. The device of claim 11 wherein said Venturi diverges from said axis at an angle of approximately 4 to 15 degrees.

18. The device of claim 11, wherein said Venturi diverges from said axis at an angle of approximately 6 degrees.

SCHMIDT '214 CLAIMS

1 A method for achieving critical flow through a downhole flow control valve in a well having a tubing concentrically spaced within a casing by an annulus comprising the steps of:

placing a valve within the well at, a predetermined location;

injecting compressed fluid of density less than a density of reservoir fluids into the annulus;

transmitting the injected fluid from the annulus into a nozzle portion of the valve at a threshold pressure level;

decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;

increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;

mixing fluid ejected from the Venturi portion of the valve with reservoir fluids in the tubing;

varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and

stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in critical flow through the valve.

2. A method for achieving critical flow through a downhole flow control valve in a well having a tubing concerntrically spaced within a casing by an annulus comprising the steps of:

placing a vane within the well at a predetermined location;

injecting compressed fluid of density less than a density of reservoir fluids into the annulus;

transmitting the injected fluid From the annulus into a nozzle portion of the valve at a threshold pressure level;

decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;

increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;

mixing fluid ejected from the Venturi portion of the valve with reservoir fluids in the tubing;

varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and

stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in a constant fluid injection rate independent of the pressure within the tubing.

3. A method for achieving critical flow through a downhole flow control valve in a well having a tubing concentrically spaced within a casing by an annulus comprising the steps of:

placing a valve within the well at a predetermined location;

injecting compressed fluid of density less than a density of reservoir fluids into the annulus;

transmitting the injected fluid from the annulus into a nozzle portion of the valve at a threshold pressure level;

decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;

increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;

mixing fluid ejected from the Venturi portion of the valve with reservoir fluids in the tubing;

varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and

stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in critical flow through the valve over a range of tubing pressure extending from about zero to about ninety percent of the casing pressure.

4. In a gas lift system for injecting pressurized gas into a well having a production string, a gas flow control valve comprising:

a housing including at least one inlet port and at least one outlet port;

an orifice comprising a nozzle portion and a Venturi portion;

said nozzle portion including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end; said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi portion including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, such that a throat is defined therebetween where critical flow is achieved, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said pressurized gas flows into said at least one inlet port of said gas flow control valve through said continuous flow path, and out through said at least one outlet port into said production string; and

a check valve means responsive to said flow of pressurized gas.

5. In a gas lift system for injecting pressurized gas into a well having a production string, a gas flow control valve comprising:

a housing including at least one inlet port, and at least one outlet port;

an orifice comprising a nozzle portion and a Venturi portion;

said nozzle portion including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi portion including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said pressurized gas flows into said at least one inlet port of said gas flow control valve through said continuous flow path, and out through said at least one outlet port into said production string wherein a differential pressure between said nozzle first end and said Venturi second end is less than about 10%; and

a check valve means responsive to said flow of pressurized gas.

EXPLANATION OF WHY EACH CLAIM IS DIRECTED TO THE SAME PATENTABLE INVENTION AS THE COUNT

The common patentable feature of all of the claims to be designated as corresponding to the count is a converging-diverging orifice in a gas lift valve. The feature is addressed at column 13, lines 50-58 of the Schmidt '214 patent, wherein the following is stated:

> In the gas lift valve of the present invention, a converging-diverging, or nozzle-Venturi, orifice downstream of the ball and seat will result in a constant critical flow rate and injection of the gas at a constant critical flow rate which is determined by the geometry of the valve and orifice. Compared to the prior art gas lift valve, a gas lift valve of the present invention will have a lower differential pressure at which critical flow across the gas lift valve will occur.

A prior art gas lift valve is illustrated in Figure 2 of the Schmidt '717 patent, in Figure 5 of the Schmidt '214 patent, and in Figures 1-3 of the Almeida application. As illustrated in these Figures, especially Figure 2 of the Almeida application, this prior art gas lift valve has a cylindrical geometry with a uniform diameter.

The converging-diverging geometry of the orifice recited in the claim corresponding to the count is illustrated in Figure 3 of the Schmidt '717 patent, in Figure 6C of the Schmidt '214 patent, and in Figure 4 of the Almeida application. The remaining recitations of the claims corresponding to the count describe features of prior art gas lift valves and uses thereof.

The following is provided in 37 CFR 1.601(n):

> Invention "A" is the *same patentable invention* as an invention "B" when invention "A" is the same as (35 U.S.C. 102) or is obvious (35 U.S.C. 103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A". Invention "A" is a *separate patentable invention* with respect to invention "B" when invention "A" is new (35 U.S.C. 102) and non-obvious (35 U.S.C. 103) in view of invention "B" assuming invention "B" is prior art with respect to invention "A".

The explanation hereinafter first provides an analysis of Almeida's claim, assuming the invention of Schmidt is prior art. This explanation concludes with an analysis of Schmidt's claims on a claim-by-claim basis, assuming that the invention of Almeida is prior art.

ALMEIDA CLAIM 4 VS. SCHMIDT '717 CLAIM 1

Almeida claim 4 recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Almeida claim 4 is recited as follows, wherein novel and nonobvious features are shown in bold and prior art features are shown in italics:

> 4. *An apparatus for controlling gas lift in an oil well having a casing with tubing concentrically disposed therein, said apparatus comprising a gas lift valve mounted on*

> *said tubing and having an inlet end in communication with a space between said tubing and said casing and an outlet in communication with an interior of said tubing, said gas lift valve consisting of a housing and a nozzle mounted in said housing, said nozzle having a continuously open passage through which gas is allowed to flow,* **wherein said passage consists of a curved inlet portion through which gas flow is speeded up, a smooth straight, intermediate portion providing a main restriction to gas flow and a smooth, outwardly tapered, conical shaped outlet portion through which said gas flow is gradually slowed down, reducing the gas pressure loss and rendering gas flow isoentropic**.

The reduction of gas pressure loss and isoentropic flow, recited in Almeida claim 4 are a natural result of the geometry of the orifice. See column 13, lines 50-58 of the Schmidt '214 patent.

Claim 1 of the Schmidt '717 patent also recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Schmidt '717 claim 1 is recited as follows, wherein novel and nonobvious features are shown in bold and prior art features are shown in italics:

> 1. *A device for controlling a flow of gas from an external source into well tubing to enhance lift of fluid in the tubing comprising:*
>
> *a gas lift valve insertable in the tubing, said valve having a housing with an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis;*
>
> *an orifice mounted within said housing mid-portion,* **said orifice having a throat transverse to and symmetrical about said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis and a Venturi extending downwardly from said throat and diverging symmetrically outwardly from said axis,** *said orifice defining a path of flow of gas from said upper portion to said lower portion of said housing;*
>
> **said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;**

said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, such that critical flow is achieved in said throat, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said housing through said continuous flow path, and out through said at least one outlet port into said tubing, and

a check valve means responsive to said flow of gas.

Since claim 1 of the Schmidt '717 patent teaches the novel and nonobvious geometry of the orifice recited in claim 4 of the Almeida application, and the remaining features of Almeida claim 4 are either prior art features or the natural result of the geometry of the orifice, Almeida claim 4 is not patentably distinct from claim 1 of the Schmidt '717 patent.

In order to further point out the lack of patentable distinction between claim 4 of the Almeida application and claim 1 of the Schmidt '717 patent, Tables 1 and 2 are provided below. Table 1 provides a side-by-side comparison of elements of Almeida claim 4, recited in order, with corresponding elements of Schmidt '717 claim 1. Table 2 provides a side-by-side comparison of elements Schmidt '717 claim 1, recited in order, with corresponding elements of Almeida claim 4. In these Tables 1 and 2, corresponding recitations regarding each of these elements from the respective specifications are provided in parentheses and in italics below each element.

TABLE 1

ALMEIDA CLAIM 4 ELEMENTS IN ORDER VS. SCHMIDT '717 CLAIM 1 ELEMENTS

ALMEDIA CLAIM 4 ELEMENTS	SCHMIDT '717 CLAIM 1 ELEMENTS
An apparatus for controlling gas lift (*At wells where production is by continuous gas-lift a valve commonly used in working the well is referred to as a gate valve. Page 1, lines 3-5. Figure 1 is a sketch of a gate valve type of gas-lift valve currently in use. Page 2, lines 15-16.*)	**A device for controlling a flow of gas... to enhance lift of fluid... comprising...a gas lift valve** (*The present invention relates to gas lift valves...and more particularly to a...gas lift control devise. Col. 1, lines 19-21.*)
in an oil well (*A seat for a gate valve used for gas-lift producing oil wells is provided...Abstract.*)	**into well tubing** (*The present invention is employed in an environment shown in FIG. 1. Col. 2, lines 36-37. Petroleum rises in production tubing 12. Col. 2, line 41.*)
having a casing (*It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6. ...pressure differential between casing and pipe. Page 1, line 25.*)	(*Pressurized gas is introduced is introduced into annulus 14, which exits between production tubing 12 and outer steel casing 16. Col. 2, lines 41-43.*)
with tubing (*It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.*)	**into well tubing** (*Petroleum rises in production tubing 12. Col. 2, line 41.*)
concentrically disposed therein, (*It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.*)	(*Pressurized gas is introduced is introduced into annulus 14, which exits between production tubing 12 and outer steel casing 16. Col. 2, lines 41-43.*)
said apparatus c mprising a gas lift	**A device...comprising...a gas lift valve**

valve *(At wells where production is by continuous gas-lift a valve commonly used in working the well is referred to as a gate valve. Page 1, lines 3-5. Figure 1 is a sketch of a gate valve type of gas-lift valve currently in use. Page 2, lines 15-16.)*	*(The present invention relates to gas lift valves...and more particularly to a...gas lift control devise. Col. 1, lines 19-21.)*
mounted on said tubing *(It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.)*	**insertable in the tubing... having at least one outlet port for discharging the gas from the valve into the tubing** *(Pressurized gas, represented by arrows 20, flows from annulus 14 into tubing 12 via a gas flow control devise. Col. 2, lines 45-47.)*
and having an inlet end *(In the Figure there is a point marked A where gas enters the valve...Page 2, lines 16-17.)*	**with an upper portion having at least one inlet port** *(Pressurized gas at injection pressure enters device 22 through inlets 24...Col. 2, lines 45-46.)*
in communication with a space between said tubing and said casing *(It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.)*	*(Pressurized gas, represented by arrows 20, flows from annulus 14 into tubing 12 via a gas flow control devise. Col. 2, lines 45-47.)*
and an outlet *(In the Figure...gas enters the valve...and leaves out of nose C...Page 2, lines 16-18.)*	**a lower portion having at least one outlet port** *(Gas is then discharged through outlet 32...Col. 2, line 57.)*
in communication with an interior of said tubing *(In the Figure...gas enters the*	**for discharging the gas from the valve into the tubing** *(Gas is then discharged through outlet 32, at*

valve...and leaves out of nose C for the inside of the pipe...Page 2, lines 16-19.)	*production pressure, and passes into production tubing 12 (FIG. 1). Col. 2, lines 57-59.)*
said gas lift valve consisting of a housing	**a gas lift valve...said valve having a housing**
(...in Figure 2...can be seen, the housing 2 for the seat...Page 2, lines 20-21.)	*(Gas then passes through passageway 28a of an orifice holder 28...Col. 2, lines 54-55.)*
and a nozzle mounted in said housing,	**an orifice mounted within said housing mid-portion, said orifice having... a nozzle**
(...in Figure 2...can be seen, the housing 2 for the seat...Page 2, lines 20-21. The improved seat has a curved upper part 8...with a central space 11 consisting of a first sloping nozzle kind of part 12...Page 3, lines 17-20.)	*(Gas then passes through passageway 28a of an orifice holder 28...Col. 2, lines 54-55. Figure 3 illustrates the present nozzle-Venturi 34, which replaces the square-edge orifice 19. Nozzle-Venturi 34...includes a nozzle portion 34a... Col. 2, lines 60-63.)*
said nozzle having a continuously open passage through which gas is allowed to flow,	**an orifice...having...a nozzle...said orifice defining a path of flow of gas**
(The improved seat has...a central space 11...Page 3, lines 17-19. ...the place where flow is least lies at second part 13...Page 3, line 25.)	*(Gas flowing within nozzle portion 34a...through Venturi portion 34b...such that gas exiting valve 22...Col. 3, lines 35-40.)*
wherein said passage consists of a curved inlet portion	**an orifice...having...a nozzle**
(The improved seat has...a central space 11 consisting of first sloping nozzle kind of part 12... Page 3, lines 17-20.)	*(Gas flowing within nozzle portion 34a...Col. 3, line 35. Siedwalls 38 are curved...Col. 3, line 5.)*
through which gas flow is speeded up,	**said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;**
(The improved seat has...a central space 11 consisting of first sloping nozzle kind of part 12, where gas is gradually speeded up... Page 3, lines 17-20.)	*(Gas flowing within nozzle portion 34a of nozzle-*

	*Venturi **34** flows at a high velocity and low pressure. Col. 3, line 35.*)
a smooth straight, intermediate portion (*The improved seat has...a central space **11** consisting of...a second cylindrical part **13**...Page 3, lines 17-21.*)	**said orifice having a throat transverse to and symmetrical about said longitudinal axis, a nozzle extending upwardly from said throat... and a Venturi extending downwardly from said throat** (*Nozzle portion **34a** lies above throat **36**, and Venturi portion **34b** lies below throat **36**. Col. 2, lines 63-65.*)
providing a main restriction to gas flow (*The improved seat has...a central space **11** consisting of...a second cylindrical part **13**...which represents main restriction to flow...Page 3, lines 17-22.*)	(*Sidewalls **38** are progressively restrictive to throat **36**. Col. 3, lines 1-2.*)
and a smooth, outwardly tapered, conical shaped outlet portion (*The improved seat has...a central space **11** consisting of...a third part **14** in the shape of a conical diffuser...Page 3, lines 17-23.*)	**a Venturi extending downwardly from said throat and diverging symmetrically outwardly... said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end** (*Venturi **34b** increases in cross-section area...Col. 3, lines 33-34.*)
through which said gas flow is gradually slowed down, (*The improved seat has...a central space **11** consisting of...a third part **14** in the shape of a conical diffuser, where gas is gradually slowed down. Page 3, lines 17-24.*)	**a Venturi flow path... such that the gas experiences a rise in pressure** (*The gas flowing through Venturi portion **34b** decreases in velocity and increases in pressure...Col. 3, lines 36-38.*)

reducing the gas pressure loss and rendering gas flow isoentropic. (*This invention relates to an improvement...so as to render flow isoentropic...Page 1, lines 14-16. Thus irreversiblilities are diminished...the vena contracta phenomenon being thereby avoided. Page 3, lines 24-26.*)	**such that critical flow is achieved in said throat** (*...the gas exiting the valve 22 has pressure recovered with a minimal amount of energy or pressure loss. Col. 3, lines 38-40. The present nozzle-Venturi provides for lower pressure drop. Col. 3, lines 59-60.*)

TABLE 2

SCHMIDT '717 CLAIM 1 ELEMENTS IN ORDER VS. ALMEIDA CLAIM 4 ELEMENTS

SCHMIDT '717 CLAIM 1 ELEMENTS	ALMEIDA CLAIM 4 ELEMENTS
A device for controlling a flow of gas (*The present invention relates to gas lift valves...and more particularly to a...gas lift control devise. Col. 1, lines 19-21.*)	**An apparatus for controlling gas lift... said apparatus comprising a gas lift valve... reducing the gas pressure loss and rendering gas flow isoentropic** (*At wells where production is by continuous gas-lift a valve commonly used in working the well is referred to as a gate valve. Page 1, lines 3-5. Figure 1 is a sketch of a gate valve type of gas-lift valve currently in use. Page 2, lines 15-16. This invention relates to an improvement...so as to render flow isoentropic...Page 1, lines 14-16. Thus irreversiblilities are diminished...the vena contracta phenomenon being thereby avoided. Page 3, lines 24-26*)
from an external source (*A gas lift well system 10 extends from above ground G, where system 10 is connected to a*	(*At wells where production is by continuous gas-lift...the valve...lets in gas from...the*

pressurized gas source (not shown)...Col. 2, lines 36-39.)

into well tubing

(The present invention is employed in an environment shown in FIG. 1. Col. 2, lines 36-37. Petroleum rises in production tubing 12. Col. 2, line 41.)

to enhance lift of fluid in the tubing

(In accordance with the present invention, a gas flow control device for injecting gas into a production string for recovering gas pressure and reducing frictional losses, so that critical flow can be reached at lower pressure drops and thus higher production is provided. Col. 2, lines 3-7.)

comprising: a gas lift valve

(The present invention relates to gas lift valves.. Col. 1, line 19.)

insertable in the tubing,

(Pressurized gas, represented by arrows 20, flows from annulus 14 into tubing 12 via a gas flow control devise. Col. 2, lines 45-47.)

said valve having a housing

(Gas then passes through passageway 28a of an orifice holder 28...Col. 2, lines 54-55.)

annulus...Page 1, lines 3-6.)

a gas lift valve mounted on said tubing and having... an outlet in communication with an interior of said tubing

(It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.)

an apparatus for controlling gas lift... reducing the gas pressure loss and rendering gas flow isoentropic

(This invention relates to an improvement...so as to render flow isoentropic...Page 1, lines 14-16. Thus irreversiblilities are diminished...the vena contracta phenomenon being thereby avoided. Page 3, lines 24-26.)

said apparatus comprising a gas lift valve

(At wells where production is by continuous gas-lift a valve commonly used in working the well is referred to as a gate valve. Page 1, lines 3-5. Figure 1 is a sketch of a gate valve type of gas-lift valve currently in use. Page 2, lines 15-16.)

a gas lift valve mounted on said tubing

(It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6.)

said gas lift valve consisting of a housing and...

(...in Figure 2...can be seen, the housing 2 for the seat...Page 2, lines 20-21.)

with an upper portion having at least one inlet port for admitting the gas *(Pressurized gas at injection pressure enters device 22 through inlets 24...Col. 2, lines 45-46.)*	**a gas lift valve... having an inlet end** *(In the Figure there is a point marked A where gas enters the valve...Page 2, lines 16-17.)*
for admitting the gas from the external source into the valve, *(A gas lift well system 10 extends from above ground G, where system 10 is connected to a pressurized gas source (not shown)...Col. 2, lines 36-39. Pressurized gas, represented by arrows 20, flows from annulus 14 into tubing 12 via a gas flow control devise. Col. 2, lines 45-47.)*	**an inlet end in communication with a space between said tubing and said casing** *(In the Figure there is a point marked A where gas enters the valve....Page 2, lines 16-17. It is the valve which lets in gas from between the annulus and the production pipe, into the latter. Page 1, lines 5-6)*
a lower portion having at least one outlet port *(Gas is then discharged through outlet 32...Col. 2, line 57.)*	**said tubing...having...an outlet** *(In the Figure...gas enters the valve...and leaves out of nose C...Page 2, lines 16-18.)*
for discharging the gas from the valve into the tubing *(Gas is then discharged through outlet 32, at production pressure, and passes into production tubing 12 (FIG. 1). Col. 2, lines 57-59.)*	**an outlet in communication with an interior of said tubing** *(In the Figure...gas enters the valve...and leaves out of nose C for the inside of the pipe...Page 2, lines 16-19.)*
and a mid-portion extending therebetween on a longitudinal axis; *(Pressurized gas at injection pressure enters device 22 through inlets 24...Col. 2, lines 45-46. Gas is then discharged through outlet 32, at production pressure, and passes into production tubing 12 (FIG. 1). Col. 2, lines*	*(In the Figure there is a point marked A where gas enters the valve... and leaves out of nose C...Page 2, lines 16-18.)*

57-59.)

an orifice mounted within said housing mid-portion, (*Gas then passes through passageway 28a of an orifice holder 28...Col. 2, lines 54-55. Figure 3 illustrates the present nozzle-Venturi 34, which replaces the square-edge orifice 19. Col. 2, lines 60-62.*)	**said gas lift valve consisting of a housing and a nozzle mounted in said housing, said nozzle having a continuously open passage through which gas is allowed to flow** (*...in Figure 2...can be seen, the housing 2 for the seat...Page 2, lines 20-21. The improved seat has a curved upper part 8...with a central space 11...Page 3, lines 17-19. ...the place where flow is least lies at second part 13...Page 3, line 25.*)
said orifice having a throat transverse to and symmetrical about said longitudinal axis, (*Nozzle portion 34a lies above throat 36, and Venturi portion 34b lies below throat 36. Col. 2, lines 63-65.*)	**said nozzle having... a smooth straight, intermediate portion** (*The improved seat has...a central space 11 consisting of...a second cylindrical part 13...Page 3, lines 17-21.*)
a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis (*Nozzle portion 34a lies above throat 36, and Venturi portion 34b lies below throat 36. Col. 2, lines 63-65. Sidewalls 38 are curved...Col. 3, line 5.*)	**said nozzle having... a curved inlet portion through which gas flow is speeded up** (*The improved seat has...a central space 11 consisting of first sloping nozzle kind of part 12... Page 3, lines 17-20.*)
and a Venturi extending downwardly from said throat and diverging symmetrically outwardly from said axis, (*Venturi 34b increases in cross-section area...Col. 3, lines 33-34.*)	**said nozzle having... a smooth, outwardly tapered, conical shaped outlet portion through which said gas flow is gradually slowed down** (*The improved seat has...a central space 11 consisting of...a third part 14 in the shape of a conical diffuser...Page 3, lines 17-23.*)
said orifice defining a path of flow of gas	**said nozzle having a continuously open**

from said upper portion to said lower portion of said housing; *(Gas flowing within nozzle portion **34a**...through Venturi portion **34b**...such that gas exiting valve **22**...Col. 3, lines 35-40.)*	**passage through which gas is allowed to flow** *(The improved seat has...a central space **11**...Page 3, lines 17-19. ...the place where flow is least lies at second part **13**...Page 3, line 25.)*
said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, *(Nozzle portion **34a** lies above throat **36**, and Venturi portion **34b** lies below throat **36**. Col. 2, lines 63-65. Sidewalls **38** are curved...Col. 3, line 5.)*	**said nozzle having... a curved inlet portion** *(The improved seat has...a central space **11** consisting of first sloping nozzle kind of part **12**... Page 3, lines 17-20.)*
such that the gas experiences a decrease in pressure; *(Gas flowing within nozzle portion **34a** of nozzle-Venturi **34** flows at a high velocity and low pressure. Col. 3, line 35.)*	**through which gas flow is speeded up** *(The improved seat has...a central space **11** consisting of first sloping nozzle kind of part **12**, where gas is gradually speeded up... Page 3, lines 17-20.)*
said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, *(Venturi **34b** increases in cross-section area...Col. 3, lines 33-34.)*	**said nozzle having... a smooth, outwardly tapered, conical shaped outlet portion** *(The improved seat has...a central space **11** consisting of...a third part **14** in the shape of a conical diffuser...Page 3, lines 17-23.)*
such that the gas experiences a rise in pressure, *(The gas flowing through Venturi portion **34b** decreases in velocity and increases in pressure...Col. 3, lines 36-38.)*	**through which said gas flow is gradually slowed down** *(The improved seat has...a central space **11** consisting of...a third part **14** in the shape of a conical diffuser, where gas is gradually slowed*

	down. Page 3, lines 17-24.)
said Venturi first end being disposed adjacent said nozzle second end, *(Nozzle portion **34a** lies above throat **36**, and Venturi portion **34b** lies below throat **36**. Col. 2, lines 63-65.)*	*(The improved seat has...a central space **11** consisting of first sloping nozzle kind of part **12**...a second cylindrical part **13**...and a third part **14** in the shape of a conical diffuser...Page 3, lines 17-23.)*
such that critical flow is achieved in said throat, *(...the gas exiting the valve 22 has pressure recovered with a minimal amount of energy or pressure loss. Col. 3, lines 38-40. The present nozzle-Venturi provides for lower pressure drop. Col. 3, lines 59-60.)*	**reducing the gas pressure loss and rendering gas flow isoentropic** *(This invention relates to an improvement...so as to render flow isoentropic...Page 1, lines 14-16. Thus irreversiblilities are diminished...the vena contracta phenomenon being thereby avoided. Page 3, lines 24-26.)*
said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path; *(Gas flowing within nozzle portion **34a**...through Venturi portion **34b**...such that gas exiting valve **22**...Col. 3, lines 35-40.)*	**said nozzle having a continuously open passage through which gas is allowed to flow** *(The improved seat has...a central space **11**...Page 3, lines 17-19. ...the place where flow is least lies at second part **13**...Page 3, line 25.)*
whereby said gas flows into said at least one inlet port of said housing *(Pressurized gas at injection pressure enters device 22 through inlets **24**...Col. 2, lines 45-46.)*	**said apparatus comprising a gas lift valve... having an inlet end** *(In the Figure there is a point marked A where gas enters the valve...Page 2, lines 16-17.)*
through said continuous flow path, *(Gas flowing within nozzle portion **34a**...through Venturi portion **34b**...such that gas exiting valve **22**...Col. 3, lines 35-40.)*	**said nozzle having a continuously open passage through which gas is allowed to flow** *(The improved seat has...a central space **11**...Page 3, lines 17-19. ...the place where flow is least lies at second part **13**...Page 3, line 25.)*

and out through said at least one outlet port into said tubing,	**said apparatus comprising a gas lift valve...having...an outlet**
*(Pressurized gas, represented by arrows **20**, flows from annulus **14** into tubing **12** via a gas flow control devise. Col. 2, lines 45-47. Gas is then discharged through outlet **32**...Col. 2, line 57.)*	*(In the Figure...gas enters the valve...and leaves out of nose C...Page 2, lines 16-18.)*
and a check valve means responsive to said flow of gas.	
*(Gas then passes through passageway **28a** of orifice holder **28** and past the check valve **30**. Gas is then discharged through outlet **32**. Col. 2, lines 55-57.)*	[A CHECK VALUE IS NOT RECITED IN THE SPECIFICATION OF THE '353 APPLICATION. HOWEVER, SUCH A CHECK VALVE IS CLEARLY DEPICTED, ALTHOUGH NOT NUMBERED IN FIGURE 1.]

Further illustrations of the lack of patentable distinction between claim 4 of the Almeida application and claim 1 of the Schmidt '717 patent are provided in Tables 3 and 4 below. Table 3 relates elements of Almeida claim 4 to features (in parentheses) illustrated in the Schmidt '717 patent. Table 4 relates elements of Schmidt '717 claim 1 to features illustrated in the Almeida application.

TABLE 3

COMPARISON OF CLAIM 4 OF '353 APPLICATION WITH DRAWINGS OF '717 PATENT

4. An apparatus for controlling gas lift in an oil well having a **casing** (*col. 2, line 43 - outer steel* **casing 16**) with **tubing** (*col. 2, line 42 - production* **tubing 12**) concentrically disposed therein, said apparatus comprising a **gas lift valve** (*col. 2, line 51 - gas flow control* **device 22**) mounted on said **tubing** (*col. 2, line 42 - production* **tubing 12**) and having an **inlet end** (*col. 2, line 53 -*

inlets 24) in communication with a **space** (*col. 2, line 43* - **annulus 14**) between said **tubing** (*col. 2, line 42 - production* **tubing 12**) and said **casing** (*col. 2, line 43 - outer steel* **casing 16**) and an **outlet** (*col. 2, line 57* - **outlet 32**) in communication with an interior of said **tubing** (*col. 2, line 42 - production* **tubing 12**), said **gas lift valve** (*col. 2, line 51 - gas flow control* **device 22**) consisting of a **housing** (*depicted in Fig. 2, but not identified by number*) and a **nozzle** (*col. 2, line 60* - **nozzle-Venturi 34**) mounted in said **housing** (*depicted in Fig. 2, but not identified by number*), said **nozzle** (*col. 2, line 60* - **nozzle-Venturi 34**) having a continuously open **passage** (*col. 2, lines 63-65* - **nozzle portion 34a, throat 36 and Venturi portion 34b**) through which gas is allowed to flow, wherein said passage consists of a **curved inlet portion** (*col. 2, lines 63-64* - **nozzle portion 34a**; *col. 3, line 5* - **Sidewalls 38** *are curved*) through which gas flow is **speeded up** (*col. 3, lines 34-35 - Gas flowing within* **nozzle portion 34a** *flows at* ***high velocity*** *and a low pressure*), a smooth straight, **intermediate portion** (*col. 2, line 64* - **throat 36**) providing a main **restriction to gas flow** (*col. 3, lines 1-2* - **Sidewalls 38** *are progressively* ***restrictive to*** **throat 36**) and a smooth, outwardly tapered, conical shaped **outlet portion** (*col. 2, line 64* - **Venturi portion 34b**) through which said gas flow is gradually **slowed down** (*col 3, lines 35-37 - The gas flowing through* **Venturi portion 34b** ***decreases in velocity*** *and increases in pressure*), reducing the gas **pressure loss** and rendering gas **flow isoentropic** (*col. 3, lines 37-40 - such that the gas exiting* **valve 22** *has pressure recovered with* ***a minimal amount of energy loss or pressure loss***).

TABLE 4

COMPARISON OF CLAIM 1 OF '717 PATENT WITH DRAWINGS OF '353 APPLICATION

1. A device for controlling a flow of gas from an external source into well tubing to enhance lift of fluid in the tubing comprising:

a **gas lift valve** (**Figure 1**) insertable in the tubing, said valve having a housing with an upper portion having **at least one inlet port** (**p int marked A**) for admitting the gas from the external source into the valve, a lower portion having at least one **utlet port** (**nose C**) for discharging the

gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis;

an **orifice (seat 7)** mounted within said **housing mid-portion (housing 2)**, said **orifice (seat 7)** having a **throat (cylindrical part 13)** transverse to and symmetrical about said longitudinal axis, a **nozzle (part 12)** extending upwardly from said **throat (cylindrical part 13)** and diverging symmetrically outwardly from said axis and a **Venturi (third part 14)** extending downwardly from said **throat (cylindrical part 13)** and diverging symmetrically outwardly from said axis, said **orifice (seat 7)** defining a **path (space 11)** of flow of gas from said upper portion to said lower portion of said **housing (housing 2)**;

said **nozzle (part 12)** including a **nozzle first end (top of 12)**, a **nozzle second end (bottom of 12)**, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said **Venturi (third part 14)** including a **first end (top of 14)** and a **second end (bottom of 14)**, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi **first end (top of 14)** being disposed adjacent said nozzle **second end (bottom of 12)**, such that critical flow is achieved in said **throat (cylindrical part 13)**, said Venturi flow path being aligned with said nozzle flow path to provide a **continuous flow path (space 11)**;

whereby said gas flows into said at least one **inlet port (point marked A)** of said **housing (housing 2)** through said **continuous flow path (space 11)**, and out through said at least one **outlet port (nose C)** into said tubing, and

a **check valve means (depicted but not numbered in Figure 1)** responsive to said flow of gas.

SCHMIDT '717 CLAIM 1 VS. ALMEIDA CLAIM 4

For reasons given above, claim 1 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application. In particular, claim 1 of the Schmidt '717 patent recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Almeida claim 4 also recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Since claim 4 of the Almeida application teaches the novel and nonobvious geometry of the

orifice recited in claim 1 of the Schmidt '717 patent, and the remaining features of Schmidt '717 claim 1 are prior art features, claim 1 of the Schmidt '717 patent is not patentably distinct from Almeida claim 4.

It is noted that Schmidt '717 claim 1 recites a check valve means, whereas claim 4 of the Almeida application does not recite this feature. As pointed out in the Schmidt patents, e.g., with reference to Figure 2 of the Schmidt '717 patent, such a check valve is a feature of prior art gas lift valves. Even if Schmidt had not admitted that this feature was part of the prior art, it would be obvious to place a check valve in the gas lift valve recited in the Almeida patent, in order to prevent oil from flowing in the reverse direction through the gas lift valve, under conditions when gas pressure drops below a level to cause such a back-up.

SCHMIDT '717 CLAIM 2 VS. ALMEIDA CLAIM 4

Claim 2 of the Schmidt '717 patent is dependent from claim 1 and recites that the uppermost portion of the nozzle has a diameter which is "approximately" 2.5 times the diameter of the throat. This dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 3 VS. ALMEIDA CLAIM 4

Claim 3 of the Schmidt '717 patent is dependent from claim 1 and recites that the uppermost portion of the nozzle has a diameter which is " at least" 2.5 times the diameter of the throat. This dimension is an obvious design feature. The gas lift valve of the Almeida

application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 4 VS. ALMEIDA CLAIM 4

Claim 4 of the Schmidt '717 patent is dependent from claim 1 and recites that the Venturi diverges at a particular angle (approximately 4 to 15 degrees). This dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 5 VS. ALMEIDA CLAIM 4

Claim 5 of the Schmidt '717 patent is dependent from claim 1 and recites that the Venturi diverges at a particular angle (approximately 6 degrees). This dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 6 VS. ALMEIDA CLAIM 4

Claim 6 of the Schmidt '717 patent is dependent from claim 1 and recites that "...said nozzle has a circular contour of equal radii greater greater than a diameter of said throat and having points of origin on a perimeter of a planar figure concentric about and in a plane common

with said throat." This dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 7 VS. ALMEIDA CLAIM 4

Claim 7 of the Schmidt '717 patent is an independent claim including all of the recitations of claim 1 of the Schmidt '717 patent, except that claim 7 does not recite "such that critical flow is achieved in said throat". The added recitations in claim 7 are highlighted in bold and the omitted section is italicized and bracketed as follows:

> 7. A device for controlling a flow of gas from an external source into well tubing to enhance lift of fluid in the tubing comprising:
>
> a gas lift valve insertable in the tubing, said valve having a housing with an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis;
>
> an orifice mounted within said housing mid-portion, said orifice having a throat transverse to and symmetrical about said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis **in a circular contour of equal radii greater than a diameter of said throat and having points of origin on a perimeter of a planar figure concentric about and in a plane common with said throat** and a Venturi extending downwardly from said throat and diverging symmetrically linearly outwardly from said axis, said orifice defining a path of flow of gas from said upper portion to said lower portion of said housing;
>
> said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;
>
> said Venturi including a first end and a second end, and a Venturi flow path . . .

therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, [*such that critical flow is achieved in said throat,*] said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said housing through said continuous flow path, and out through said at least one outlet port into said tubing **wherein a differential pressure between said nozzle first end and said Venturi second end is less than about 10%;** and

a check valve means responsive to said flow of gas.

The omission of the recitation regarding critical flow does not serve to make Schmidt '717 claim 7 patentably distinct from claim 4 of the Almeida application.

The recitation of the contour of the nozzle in Schmidt '717 claim 7 is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

The recitation of the differential pressure in Schmidt '717 claim 7 is a natural consequence of the geometry of the orifice. Since the geometry of the respective orifices is the same, the Almeida valve would have the same differential pressure as the Schmidt valve.

Therefore, Schmidt '717 claim 7 is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 8 VS. ALMEIDA CLAIM 4

Claim 8 of the Schmidt '717 patent is dependent from claim 1 and recites that "...said nozzle radii is approximately 1.5 to 2.5 times said throat diameter." The meaning of this recitation is not entirely clear, particularly in terms of the expression "radii" (plural). However, insofar as this recitation is directed to a dimension, this dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 9 VS. ALMEIDA CLAIM 4

Claim 9 of the Schmidt '717 patent is dependent from claim 1 and recites that "...said nozzle radii is approximately 1.9 times said throat diameter." The meaning of this recitation is not entirely clear, particularly in terms of the expression "radii" (plural). However, insofar as this recitation is directed to a dimension, this dimension is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 10 VS. ALMEIDA CLAIM 4

Claim 10 of the Schmidt '717 patent is dependent from claim 7 and recites that the Venturi has a conical contour. This contour is an obvious design feature. The gas lift valve of the Almeida application achieves the same result in the same way as the gas lift valve of the ...

Schmidt patents. Therefore, it would be obvious to design the respective valves in the same way. No criticality or unexpected advantages are attributed to this design feature in the Schmidt patents.

SCHMIDT '717 CLAIM 11 VS. ALMEIDA CLAIM 4

Claim 11 of the Schmidt '717 patent is an independent claim including recitations of claim 1 of the Schmidt '717 patent, with some minor omissions and additions. The added recitations in claim 11 are highlighted in bold and the omitted recitations are italicized and bracketed as follows:

> 11. A device for controlling a flow of gas from an external source into well tubing to enhance lift of **production** fluid in the tubing comprising:
>
> a gas flow valve insertable in the tubing, said valve having an upper portion having at least one inlet port for admitting the gas from the external source into the valve, a lower portion having at least one outlet port for discharging the gas from the valve into the tubing and a mid-portion extending therebetween on a longitudinal axis; **p1** an orifice mounted within said **valve** [*housing*] mid-portion, said orifice having a throat **of circular cross-section taken in a direction** transverse to [*and symmetrical about*] said longitudinal axis, a nozzle extending upwardly from said throat and diverging symmetrically outwardly from said axis **in a circular contour of equal radii greater than a diameter of said throat and having points of origin on a circle concentric about said axis and in a plane common with said throat cross-section** and a Venturi extending downwardly from said throat and diverging symmetrically **linearly** outwardly from said axis, said orifice defining a path of flow of gas from said upper portion to said lower portion of said **valve** [*housing*];
>
> said nozzle including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;
>
> said Venturi including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being

disposed adjacent said nozzle second end, such that critical flow is achieved in said throat, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said gas flows into said at least one inlet port of said valve through said continuous flow path, and out through said at least one outlet port into said tubing; and

a check valve means responsive to said flow of gas.

Claim 11 includes the same added recitation of claim 7 regarding the contour of the nozzle. The other differences between claim 11 and claim 1 are merely editorial in nature and do not change the meaning of the claim.

Accordingly, claim 11 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 12 VS. ALMEIDA CLAIM 4

Claim 12 of the Schmidt '717 patent is dependent from claim 11 and includes essentially the same recitations as claim 2 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 12 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 13 VS. ALMEIDA CLAIM 4

Claim 13 of the Schmidt '717 patent is dependent from claim 11 and includes essentially the same recitations as claim 3 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 13 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 14 VS. ALMEIDA CLAIM 4

Claim 14 of the Schmidt '717 patent is dependent from claim 11 and includes the same recitations as claim 8 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 14 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 15 VS. ALMEIDA CLAIM 4

Claim 15 of the Schmidt '717 patent is dependent from claim 11 and includes the same recitations as claim 9 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 15 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 16 VS. ALMEIDA CLAIM 4

Claim 16 of the Schmidt '717 patent is dependent from claim 11 and includes the same recitations as claim 10 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 16 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 17 VS. ALMEIDA CLAIM 4

Claim 17 of the Schmidt '717 patent is dependent from claim 11 and includes the same recitations as claim 4 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 17 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '717 CLAIM 18 VS. ALMEIDA CLAIM 4

Claim 18 of the Schmidt '717 patent is dependent from claim 11 and includes the same recitations as claim 5 of the Schmidt '717 patent. Accordingly, for reasons given above, claim 17 of the Schmidt '717 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '214 CLAIM 1 VS. ALMEIDA CLAIM 4

As pointed out above, Almeida claim 4 recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Claim 1 of the Schmidt '214 patent recites an obvious way of using the valve recited in Almeida claim 4.

Schmidt '214 claim 1 is recited as follows, wherein novel and nonobvious features are shown in bold and prior art features are shown in italics:

> 1. *A method for achieving critical flow through a downhole flow control valve in a well having a tubing concentrically spaced within a casing by an annulus comprising the steps of:*
>
> *placing a valve within the well at, a predetermined location;*
>
> *injecting compressed fluid of density less than a density of reservoir fluids into the annulus;*
>
> *transmitting the injected fluid from the annulus* **into a nozzle portion of the valve** *at a threshold pressure level;*
>
> **decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;**
>
> **increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;**
>
> *mixing fluid ejected from the* **Venturi portion of the** *valve with reservoir fluids in the tubing;*
>
> *varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and*
>
> *stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in critical flow through the valve.*

Claim 4 of the Almeida application recites an apparatus which is can only be used in a gas lift process, especially as recited in claim 1 of th Schmidt '214 patent. Therefore, no

patentable distinction is seen between the process claim of claim 1 of the Schmidt '214 and the apparatus of claim 4 of the Almeida application. MPEP 806.05(e).

A claim for a material and may be placed into interference with a method of using the material, provided that the count recites the material and the method in the alternative. Orikasa v. Oonishi, 10 USPQ2d 1996 (Comm'r Pat. & T.M. 1989). Since it would be obvious to practice the invention of claim 4 of the Almeida application by the process recited in claim 1 of the Schmidt '214 patent, these claims interfere with one another and should not be permitted to issue in separate patents to different inventors and different assignees. Such separate patents could subject a potential user to a double charge of infringement for practicing a single invention or the potential user could obtain a license under one of the patents and still be restricted from practicing the same invention by the other patent. Since the two patents would not expire on the same date, the period of patent monopoly could also be unduly prolonged.

The above italicized portions of Schmidt '214 claim 1 recite prior art features. The preamble portion of Schmidt '214 claim 1 recites a method for achieving critical flow through a downhole flow control valve in a well having a tubing concentrically space within a casing by an annulus. A pointed out at column 14, lines 57-62 of the Schmidt '214 patent, it was know in the prior art to achieve such a critical flow, provided that one could tolerate a large pressure drop. In particular, such critical flow could be achieved with the flow control valve depicted in Figure 5 of the Schmidt '214 patent, employed in the in a well penetrated with a tubing concentrically spaced within a casing by an annulus, as depicted in Figure 4 of the Schmidt '214 patent.

Therefore, the preamble of claim 1 of the Schmidt '214 patent recites only prior art features and does not patentably distinguish this claim from claim 4 of the Almeida application.

After the preamble portion of the claim 1 of the Schmidt '214 patent, it is recited that the valve is placed in a predetermined location, compressed fluid (e.g., gas) is injected into the annulus, compressed fluid passes through the valve to the tube and the compressed fluid mixes with the reservoir fluid. These features are known in the prior art, especially as described in the Schmidt '214 patent in connection with Figure 4. Therefore, these features of claim 1 of the Schmidt '214 patent recite only prior art features and do not patentably distinguish this claim from claim 4 of the Almeida application.

The body of claim 1 of the Schmidt '214 patent also recites adjustment features, wherein the compressed fluid is first introduced at a threshold pressure level, the pressure is varied to proportionally vary the rate of compressed fluid injection, and the pressure is stabilized in the critical flow range. These adjustment features are obvious, especially in view of the motivation to achieve critical flow through the valve. Therefore, these adjustment features of claim 1 of the Schmidt '214 patent recite only prior art features and do not patentably distinguish this claim from claim 4 of the Almeida application.

Claim 4 of the Almeida application teaches the remaining features of claim 1 of the Schmidt '214 patent which are shown in bold in the above-quoted version of Schmidt '214 claim 1. As a natural result of the configuration of the nozzle portion of the valve and the Venturi portion of the valve, particularly in conformance with Bernoulli's theorem, the pressure decreases in the nozzel portion and increases in the Venturi portion.

Accordingly, claim 1 of the Schmidt '214 patent is directed to the same invention as claim 4 of the Almeida application.

SCHMIDT '214 CLAIM 2 VS. ALMEIDA CLAIM 4

Claim 2 of the Schmidt '214 patent is an independent claim including recitations of claim 1 of the Schmidt '214 patent, with some minor omissions and additions. The added recitations in claim 2 are highlighted in bold and the omitted recitations are italicized and bracketed as follows:

> 2. A method for achieving critical flow through a downhole flow control valve in a well having a tubing concerntrically spaced within a casing by an annulus comprising the steps of:
>
> placing a **vane** [*valve*] within the well at a predetermined location;
>
> injecting compressed fluid of density less than a density of reservoir fluids into the annulus;
>
> transmitting the injected fluid **From** [*from*] the annulus into a nozzle portion of the valve at a threshold pressure level;
>
> decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;
>
> increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;
>
> mixing fluid ejected from the Venturi portion of the valve with reservoir fluids in the tubing;
>
> varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and
>
> stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in **a constant fluid injection rate independent of the pressure within the tubing** [*critical flow through the valve*].

Claim 2 of the Schmidt '214 patent is identical in scope to claim 1 of the Schmidt '214 patent. In particular, a constant fluid injection rate independent of pressure is achieved under critical flow conditions. The constant fluid injection rate independent of pressure is a natural consequence of geometry of the orifice when operated in an obvious manner.

Accordingly, claim 2 of the Schmidt '214 patent is not patentably distinct from claim 4 of the Almeida application.

SCHMIDT '214 CLAIM 3 VS. ALMEIDA CLAIM 4

Claim 3 of the Schmidt '214 patent is an independent claim including recitations of claim 1 of the Schmidt '214 patent, with some minor additions. The added recitations in claim 2 are highlighted in bold as follows:

> 3. A method for achieving critical flow through a downhole flow control valve in a well having a tubing concentrically spaced within a casing by an annulus comprising the steps of:
>
> placing a valve within the well at a predetermined location;
>
> injecting compressed fluid of density less than a density of reservoir fluids into the annulus;
>
> transmitting the injected fluid from the annulus into a nozzle portion of the valve at a threshold pressure level;
>
> decreasing the pressure of the injected fluid from the threshold level in the nozzle portion of the valve;
>
> increasing the pressure of the injected fluid to a pressure slightly less than the threshold pressure in a Venturi portion of the valve;
>
> mixing fluid ejected from the Venturi portion of the valve with reservoir fluids in the

tubing;

varying the pressure of the fluid injected into the annulus to proportionately vary the fluid injection rate through the valve; and

stabilizing the pressure of the fluid injected into the annulus at a pressure resulting in critical flow through the valve **over a range of tubing pressure extending from about zero to about ninety percent of the casing pressure.**

As pointed out on column 8, lines 49-58 of the Schmidt '214 patent the ability to achieve critical flow at a tubing pressure of ninety percent or less of casing pressure is an inherent result of the geometry of the orifice in the valve.

Accordingly, the added recitation in claim 3 of the Schmidt '214 patent does not serve to patentably distinguish this claim from either claim 1 of the Schmidt '214 patent or claim 4 of the Almeida application.

SCHMIDT '214 CLAIM 4 VS. ALMEIDA CLAIM 4

As pointed out above, Almeida claim 4 recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Claim 4 of the Schmidt '214 patent recites a "system" using the valve recited in Almeida claim 4.

Schmidt '214 claim 4 is recited as follows, wherein novel and nonobvious features are shown in bold and prior art features are shown in italics:

4. *In a gas lift system for injecting pressurized gas into a well having a production string, a gas flow control valve comprising:*

a housing including at least one inlet port and at least one outlet port;

an orifice **comprising a n zzle portion and a Venturi porti n;**

said nozzle portion including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end; said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;

said Venturi portion including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, such that a throat is defined therebetween where critical flow is achieved, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;

whereby said pressurized gas flows into said at least one inlet port of said gas flow control valve through said continuous flow path, and out through said at least one outlet port into said production string; and

a check valve means responsive to said flow of pressurized gas.

It will be noted that claim 4 of the '214 Schmidt patent recites the same invention as claim 1 of the Schmidt '717 patent. No difference is seen between the "system" of claim 4 of the '214 Schmidt patent and the "device" of claim 1 of the Schmidt '717 patent.

For reasons given above, claim 4 of the Schmidt '214 patent is not patentably distinct from claim 4 of the Almeida application. In particular, claim 4 of the Schmidt '214 patent recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Almeida claim 4 also recites an orifice with a novel and nonobvious geometry in a prior art gas lift valve. Since claim 4 of the Almeida application teaches the novel and nonobvious geometry of the orifice recited in claim 4 of the Schmidt '214 patent, and the remaining features of Schmidt '214 claim 4 are prior art features, claim 4 of the Schmidt '214 patent is not patentably distinct from Almeida claim 1.

SCHMIDT '214 CLAIM 5 VS. ALMEIDA CLAIM 4

Claim 5 of the Schmidt '214 patent is an independent claim including recitations of claim 4 of the Schmidt '214 patent, with some minor additions. The added recitations in claim 5 are highlighted in bold as follows:

> 5. In a gas lift system for injecting pressurized gas into a well having a production string, a gas flow control valve comprising:
>
> a housing including at least one inlet port, and at least one outlet port;
>
> an orifice comprising a nozzle portion and a Venturi portion;
>
> said nozzle portion including a nozzle first end, a nozzle second end, and a nozzle flow path between said nozzle first end and said nozzle second end, said nozzle flow path converging from said nozzle first end to said nozzle second end, such that the gas experiences a decrease in pressure;
>
> said Venturi portion including a first end and a second end, and a Venturi flow path therebetween, said Venturi flow path diverging from said Venturi first end to said Venturi second end, such that the gas experiences a rise in pressure, said Venturi first end being disposed adjacent said nozzle second end, said Venturi flow path being aligned with said nozzle flow path to provide a continuous flow path;
>
> whereby said pressurized gas flows into said at least one inlet port of said gas flow control valve through said continuous flow path, and out through said at least one outlet port into said production string **wherein a differential pressure between said nozzle first end and said Venturi second end is less than about 10%**; and
>
> a check valve means responsive to said flow of pressurized gas.

The added recitation shown in bold to claim 5 of the Schmidt '214 patent is similar (using different wording) to the added recitation shown in bold to claim 3 of the Schmidt '214 patent. As pointed out on column 8, lines 49-58 of the Schmidt '214 patent the ability to achieve critical flow at a tubing pressure of 90-95% f casing pressure, which happens when the pressure

differential across the orifice is 10 percent or less, is an inherent result of the geometry of the orifice in the valve.

Accordingly, the added recitation in claim 5 of the Schmidt '214 patent does not serve to patentably distinguish this claim from either claim 4 of the Schmidt '214 patent or claim 4 of the Almeida application.

37 CFR 1.609(b)(3)

None of the claims of the Almeida application, the Schmidt '717 patent and the Schmidt '214 patent do not correspond to the count. As explained above, all of these claims should be designated as corresponding to the count.

37 CFR 1.609(b)(4)

For reasons given below, Almeida is entitled to the benefit of all the following applications: U.S. Application Serial No. 08/186,469, filed January 26, 1994; and Brazilian Application PI 9300292, filed January 27, 1993.

It is noted that of the above-mentioned January 26, 1994 and January 27, 1993 filing dates of Almeida are prior to the earliest filing date (July 1, 1994) mentioned in the Schmidt patents. Therefore, Almeida would be senior party of the interference.

Since Schmidt has two different patents with claims corresponding to the count, it is believed that the interference would be styled "Schmidt v. Schmidt v. Almeida". It is further noted that the Schmidt '717 patent has a different lineage of applications than the Schmidt '214 patent. Therefore, the benefit issues regarding the Schmidt patents will be discussed herein separately for each patent.

For reasons given below, the Schmidt '717 patent is entitled to the filing date of the following applications: Serial No. 08/725,219, filed September 27, 1996; Serial No. 08/466,691, filed June 6, 1995; Serial No. 08/301,661, filed September 7, 1994; and Serial No. 08/269,888, filed July 1, 1994.

For reasons given below, the Schmidt '214 patent is entitled to the filing date of the following application: Serial No. 08/434,037, filed May 2, 1995; Serial No. 08/301,661, filed September 7, 1994; and Serial No. 08/269,888, filed July 1, 1994.

THE ALMEIDA APPLICATION

The pending Almeida application is Serial No. 08/859,353, filed May 20, 1997, which is a continuation of Serial No. 08/186,469, filed January 26, 1994. Since both of these applications have the same disclosure, Almeida is entitled to the benefit of Serial No. 08/186,469, filed January 26, 1994.

Serial No. 08/186,469, filed January 26, 1994, claims priority to Brazilian Application PI 9300292, filed January 27, 1993. A certified translation of this Brazilian priority document is enclosed herewith. This Brazilian priority document provides a constructive reduction to practice of an embodiment within the proposed count. A side-by-side comparison of elements of Almeida claim 4, which is one of the alternatives of the proposed count, and the disclosure of the certified translation of the priority document is provided in Table 5, below.

TABLE 5

ALMEDIA CLAIM 4 ELEMENTS	BRAZILIAN PRIORITY DOCUMENT
An apparatus for controlling gas lift	(*The present invention relates to improvements in nozzle valve seats, utilized in oil wells producing pursuant to the continuous gas lift procedure. Page F1.4, lines 8-11. Figure 1 - partial cut view of nozzle valve of type now utilized... Page F1.7, lines 2-3.*)
in an oil well	(*The present invention relates to improvements in nozzle valve seats, utilized in oil wells producing pursuant to the continuous gas lift procedure. Page F1.4, lines 8-11.*)
having a casing	(*Gas originating from annular space between cover - production line for the latter - flows thru said valve. Page F1.4, lines 18-20.*)
with tubing	(*Gas originating from annular space between cover - production line for the latter - flows thru said valve. Page F1.4, lines 18-20.*)
concentrically disposed therein,	(*Gas originating from annular space between cover - production line for the latter - flows thru said valve. Page F1.4, lines 18-20.*)
said apparatus comprising a gas lift valve	(*In oil wells producing pursuant to continuoous gas lift procedure, for well operations one commonly utilizes a valve normally named "nozzle valve". Page F1.4, lines 15-18.*)
mounted on said tubing	(*Gas originating from annular space between cover - production line for the latter - flows thru said valve. Page F1.4, lines 18-20.*)
and having an inlet end	(*Figure 1 evidences point designated "A", indicating gas admission to inside valve*

	section...Page F1.7, lines 15-17.)
in communication with a space between said tubing and said casing	(*Gas originating from annular space between cover - production line for the latter - flows thru said valve. Page F1.4, lines 18-20.*)
and an outlet	(*Figure 1 evidences point designated "A", indicating gas admission to inside valve section, flowing thru seat (specifically, the nozzle) "B" and escaping thru nose section "C" towards tube inner section. Page F1.7, lines 15-20.*)
in communication with an interior of said tubing	(*Figure 1 evidences point designated "A", indicating gas admission to inside valve section, flowing thru seat (specifically, the nozzle) "B" and escaping thru nose section "C" towards tube inner section. Page F1.7, lines 15-20.*)
said gas lift valve consisting of a housing	(*...in Figure 2...can be noticed, the seat housing 2. Page F1.7, lines 23-25.*)
and a nozzle mounted in said housing,	(*...in Figure 2... can be noticed, the seat housing 2...Page F1.7, lines 23-25. Nozzle valves are basically composed of a nozzle with diameter previously determined (also named seat or door)...Page F1.4, lines 23-25. The improved seat 7 features...a second portion 13 which is a cylindrical section of equal diameter of desired nozzle...Page F1.9, lines 11-20.*)
said nozzle having a continuously open passage through which gas is allowed to flow,	(*...the lower flow rate area coincides with the second section 13...Page F1.9, line 24 to page F1.10, line 1.*)
wherein said passage consists of a curved inlet portion	(*The improved seat 7 features an upper curved section 8...Page F1.9, lines 11-12.*)
through which gas flow is speeded up,	(*The improved seat 7 features...a converging mouthpiece wherein gas is gradually being*

	accelerated...Page F1.9, lines 11-17.)
a smooth straight, intermediate portion	(*The improved seat 7 features...a second portion 13 which is a cylindrical section...Page F1.9, lines 11-19.*)
providing a main restriction to gas flow	(*The improved seat 7 features...a second portion 13 which is a cylindrical section of equal diameter of desired nozzle and corresponds to main flux restriction...Page F1.9, lines 11-20.*)
and a smooth, outwardly tapered, conical shaped outlet portion	(*The improved seat 7 features...a third section 14, evidencing a conical diffuser format...Page F1.9, lines 11-22.*)
through which said gas flow is gradually slowed down,	(*The improved seat 7 features...a third section 14, evidencing a conical diffuser format, wherein gas is gradually being decelerated. Page F1.9, lines 11-23.*)
reducing the gas pressure loss and rendering gas flow isoentropic.	(*...gas flow within valve will resemble an isoenthropical flow...Page F1.5, lines 14-15. Utilization of this geometry...will imply a 76% - 20% decrease in cover pressure required to handle identical gas flow rate with identical line pressure...Page F1.6, lines 3-10.*)

THE SCHMIDT '717 PATENT

The Schmidt '717 patent issued from Serial No. 08/917,879, filed August 27, 1997, which is a continuation of Serial No. 08/725,219, filed September 27, 1996, which is a continuation of Serial No. 08/466,691, filed June 6, 1995, which is a continuation of Serial No. 08/301,661, filed September 7, 1994. Insofar as all of these applications have the same disclosure, and the disclosure of Serial No 08/917,879 is presumed to support the claims of the Schmidt '717 patent, Schmidt '717 is entitled to the benefit of all of these applications.

Serial No. 08/301,661, filed September 7, 1994, is a continuation-in-part of Serial No. 08/269,888, filed July 1, 1994. The disclosure of Serial No. 08/269,888 is substantially the same as the disclosure of Serial No. 08/301,661. For example, Serial No. 08/269,888 is entitled "NOZZLE-VENTURI FOR GAS LIFT VALVE", whereas Serial No. 08/301,661 is entitled "NOZZLE-VENTURI GAS LIFT FLOW DEVICE". Also, the depiction of the prior art valve shown in Figure 2 is slightly different in the two applications. However, both applications provide essentially the same description of the invention claimed in the Schmidt '717 patent, particularly with reference to Figure 4, which is common to both applications.

Therefore, since Serial No. 08/301,661 is presumed to describe the invention claimed in the Schmidt '717 patent, and the disclosure of Serial No. 08/269,888 is essentially the same as the disclosure of Serial No. 08/301,661, both applications provide a constructive reduction to practice of the invention claimed in the Schmidt '717 patent, and Schmidt is entitled to the benefit of the filing date of Serial No. 08/269,888, filed July 1, 1994.

THE SCHMIDT '214 PATENT

The Schmidt '214 patent issued from Serial No. 08/723,169, filed September 27, 1996, which is a continuation of Serial No. 08/434,037, filed May 2, 1995. Insofar as both of these applications have the same disclosure, and the disclosure of Serial No 08/723,169 is presumed to support the claims of the Schmidt '214 patent, Schmidt '214 is entitled to the benefit of Serial No. 08/434,037, filed May 2, 1995.

Serial No. 08/434,037, filed May 2, 1995, is a continuation-in-part of Serial No. 08/301,661, filed September 4, 1994. The disclosure of Serial No. 08/434,037 is more detailed than the disclosure of Serial No. 08/301,661, but the disclosure of Serial No. 08/301,661 is carried over and included in Serial No. 08/434,037.

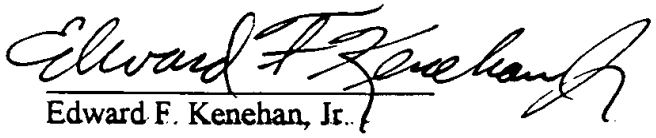
For reasons give above in connection with the Schmidt '717 patent, Serial No. 08/301,661 provides a constructive reduction to practice of embodiments within the proposed count of the interference, i.e. those embodiments claimed in the Schmidt '717 patent. Therefore, Schmidt is entitled to the benefit of Serial No. 08/301,661, filed September 4, 1994.

Serial No. 08/301,661, filed September 4, 1996, is a continuation-in-part of Serial No. 08/269,888, filed July 1, 1994. For reasons give above in connection with the Schmidt '717 patent, Serial No. 08269,888 has essentially the same disclosure as Serial No. 08/301,661, and Serial No. 08269,888 provides a constructive reduction to practice of embodiments within the proposed count of the interference, i.e. those embodiments claimed in the Schmidt '717 patent. Therefore, Schmidt is entitled to the benefit of Serial No. Serial No. 08269,888, filed July 1, 1994.

CONCLUSION

An interference should be declared between claim 4 of the Almeida U.S. Application Serial No. 08/859,353 and all of the claims of both the Schmidt U.S. Patent No. 5,743,717 and the Schmidt U.S. Patent No. 5,707,214.

Respectfully submitted,



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Date: September 17, 1999

INTERFERENCE INITIAL MEMORANDUM

BOARD OF PATENTS APPEALS INTERFERENCES: An interference is found to exist between the following cases:
This interference involves 2 parties

Count # 1

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
SCHMIDT	08/917,879	8-27-97	5,743,717	4-28-98

If application has been patented, have maintenance fees been paid? ____ Yes ____ No __ X Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
U.S.	08/725,219	9-27-96		
U.S.	08/446,619	6-6-95		
U.S.	08/301,661	9-7-94		
U.S.	08/269,888	7-1-94		

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
1-18	
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	**UNPATENTABLE PENDING CLAIMS**

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

If application has been patented, have maintenance fees been paid? ____ Yes ____ No __ ___ Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS

Instructions

1. For every patent involved in the interference, check if the maintenance fees have been paid by using the patent number with PALM screen 2970. If fees are due and they have not been paid, the interference cannot be declared since it would involve an expired patent. (35 U.S.C. 135(a); 37 CFR 1.606).
2. For each party, separately identify the patentable and unpatentable claims which correspond to the count. (37 CFR 1.601 (f), 1.601 (n), 1.609(b)(2)).
3. For each party, separately identify the patentable and unpatentable claims which do not correspond the count. (37 CFR 1.609(b)(3)).
4. Forward all files including those the benefit of which is being accorded.
5. Keep a copy of the Interference Initial Memorandum and any attachments for your records.

All information requested below must be attached on (a) separate typewritten sheet(s)

6. On a separate sheet, set forth a single proposed interference count. If any claim of any party is exactly the same word for word as this count, please indicate the party, application or patent number, and the claim number.
7. For each claim designated as corresponding to the count, provide an explanation of why each claim defines the same patentable invention as the count (37 CFR 1.609(b)(2)).
8. For each claim designated as not corresponding to the count, provide an explanation of why each claim defines a separate patentable invention from the count (37 CFR 1.609(b)(3)).
9. For each additional count, if any, repeat steps 2-6 and, additionally, provide an explanation why each count represents a separate patentable invention from every other count (37 CFR 1.609(b)(1)).

DATE	PRIMARY EXAMINER (Signature)	TELEPHONE NO.	ART UNIT
DATE	**GROUP DIRECTOR SIGNATURE (if required)**		

**The application number and filing date of each application the benefit of which is intended to be accorded must be listed. It is not sufficient to merely list the earliest application if there are intervening applications necessary for continuity.

THIS PAGE CAN BE DUPLICATED IF THERE ARE MORE THAN TWO INTERFERING PARTIES.

INTERFERENCE INITIAL MEMORANDUM

BOARD OF PATENTS APPEALS INTERFERENCES: An interference is found to exist between the following cases:
This interference involves 2 parties

Count # 1

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
SCHMIDT	08/723,169	9-27-96	5,707,214	1-13-98

If application has been patented, have maintenance fees been paid?____ Yes____No__ X Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
U.S.	08/434,037	5-2-95		
U.S.	08/301,661	9-7-94		
U.S.	08/269,888	7-1-94		

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
1-5	
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

If application has been patented, have maintenance fees been paid?____ Yes____No__ ___Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS

Instructions

1. For every patent involved in the interference, check if the maintenance fees have been paid by using the patent number with PALM screen 2970. If fees are due and they have not been paid, the interference cannot be declared since it would involve an expired patent. (35 U.S.C. 135(a); 37 CFR 1.606).
2. For each party, separately identify the patentable and unpatentable claims which correspond to the count. (37 CFR 1.601 (f), 1.601 (n), 1.609(b)(2)).
3. For each party, separately identify the patentable and unpatentable claims which do not correspond the count. (37 CFR 1.609(b)(3)).
4. Forward all files including those the benefit of which is being accorded.
5. Keep a copy of the Interference Initial Memorandum and any attachments for your records.

All information requested below must be attached on (a) separate typewritten sheet(s)

6. On a separate sheet, set forth a single proposed interference count. If any claim of any party is exactly the same word for word as this count, please indicate the party, application or patent number, and the claim number.
7. For each claim designated as corresponding to the count, provide an explanation of why each claim defines the same patentable invention as the count (37 CFR 1.609(b)(2)).
8. For each claim designated as not corresponding to the count, provide an explanation of why each claim defines a separate patentable invention from the count (37 CFR 1.609(b)(3)).
9. For each additional count, if any, repeat steps 2-6 and, additionally, provide an explanation why each count represents a separate patentable invention from every other count (37 CFR 1.609(b)(1)).

DATE	PRIMARY EXAMINER (Signature)	TELEPHONE NO.	ART UNIT
DATE	**GROUP DIRECTOR SIGNATURE (if required)**		

**The application number and filing date of each application the benefit of which is intended to be accorded must be listed. It is not sufficient to merely list the earliest application if there are intervening applications necessary for continuity.

THIS PAGE CAN BE DUPLICATED IF THERE ARE MORE THAN TWO INTERFERING PARTIES.

INTERFERENCE INITIAL MEMORANDUM

Count # 1

BOARD OF PATENTS APPEALS INTERFERENCES: An interference is found to exist between the following cases:
This interference involves 2 parties

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
ALMEIDA	08/859,353	5-20-97		

If application has been patented, have maintenance fees been paid?____ Yes____ No__ ___ Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
U.S.	08/186,469	1-26-94		
BR	PI9300292	1-27-93		

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
1	
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	**UNPATENTABLE PENDING CLAIMS**

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

If application has been patented, have maintenance fees been paid?____ Yes____ No__ ___ Maintenance fees not due yet

**Accorded the benefit of:

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY

The claim(s) of this party which correspond(s) to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
The claim(s) of this party which does(do) not correspond to this count is(are): PATENTED OR PATENTABLE PENDING CLAIMS	**UNPATENTABLE PENDING CLAIMS**

Instructions

1. For every patent involved in the interference, check if the maintenance fees have been paid by using the patent number with PALM screen 2970. If fees are due and they have not been paid, the interference cannot be declared since it would involve an expired patent. (35 U.S.C. 135(a); 37 CFR 1.606).
2. For each party, separately identify the patentable and unpatentable claims which correspond to the count. (37 CFR 1.601 (f), 1.601 (n), 1.609(b)(2)).
3. For each party, separately identify the patentable and unpatentable claims which do not correspond the count. (37 CFR 1.609(b)(3)).
4. Forward all files including those the benefit of which is being accorded.
5. Keep a copy of the Interference Initial Memorandum and any attachments for your records.

All information requested below must be attached on (a) separate typewritten sheet(s)

6. On a separate sheet, set forth a single proposed interference count. If any claim of any party is exactly the same word for word as this count, please indicate the party, application or patent number, and the claim number.
7. For each claim designated as corresponding to the count, provide an explanation of why each claim defines the same patentable invention as the count (37 CFR 1.609(b)(2)).
8. For each claim designated as not corresponding to the count, provide an explanation of why each claim defines a separate patentable invention from the count (37 CFR 1.609(b)(3)).
9. For each additional count, if any, repeat steps 2-6 and, additionally, provide an explanation why each count represents a separate patentable invention from every other count (37 CFR 1.609(b)(1)).

DATE	PRIMARY EXAMINER (Signature)	TELEPHONE NO.	ART UNIT
DATE	**GROUP DIRECTOR SIGNATURE (if required)**		

**The application number and filing date of each application the benefit of which is intended to be accorded must be listed. It is not sufficient to merely list the earliest application if there are intervening applications necessary for continuity.

THIS PAGE CAN BE DUPLICATED IF THERE ARE MORE THAN TWO INTERFERING PARTIES.

Schmidt v. Schmidt v. Almeida
Form PTO-850 Attachments

INSTRUCTION 6

Pursuant to instruction 6 on Form PTO-850, a single count is proposed as follows:

COUNT 1

Claim 4 of the Almeida application

OR

Claim 1 of the Schmidt '717 patent or claim 7 of the Schmidt '717 patent or claim 11 of the Schmidt '717 patent or claim 1 of the Schmidt '214 patent or claim 2 of the Schmidt '214 patent or claim 3 of the Schmidt '214 patent or claim 4 of the Schmidt '214 patent or claim 5 of the Schmidt '214 patent.

In the proposed count, the "Almeida application" is U.S. Application Serial No. 08/859,353, the "Schmidt '717 patent" is U.S. Patent No. 5,743,717, and the "Schmidt '214 patent" is U.S. Patent No. 5,707,214.

A recitation of the claims of the parties is provided on pages 4-11 of the REQUEST UNDER 37 CFR 1.607, filed in Almeida Serial No. 08/859,353.

INSTRUCTION 7

Pursuant to instruction 7 on Form PTO-850, a detailed explanation of why each claim defines the same patentable invention as the count is provided on pages 11-44 of the REQUEST UNDER 37 CFR 1.607, filed in Almeida Serial No. 08/859,353.

In summary, each claim of the Schmidt patents defines the same invention as the claim of the Almeida application, because each of the Schmidt claims are obvious over the Almeida claim, assuming that the Almeida claim is prior art. 37 CFR 1.601(n).

The Almeida claim 4 recites a gas lift valve with a passage having (1) an upper curved inlet portion which goes from wide to narrow; (2) a central, narrowmost intermediate portion; and (3) a lower outwardly tapered portion which goes from narrow to wide. Claim 1 of the Schmidt '717 patent recites the same passage in a conventional gas lift valve.

Claims 2-6 of the Schmidt '717 patent are dependent from claim 1 of the Schmidt '717 patent and fail to recite any features which would make these claims nonobvious over Almeida claim 4.

Claim 7 of the Schmidt '717 patent is an independent claim with only slightly different wording than claim 1 of the Schmidt '717 patent. This slight difference in wording does not make claim 7 of the Schmidt '717 patent patentably distinct from either claim 1 of the Schmidt '717 patent or Almeida claim 4.

Claims 8-10 of the Schmidt '717 patent are dependent from claim 7 of the Schmidt '717 patent and fail to recite any features which would make these claims nonobvious over Almeida claim 4.

Claim 11 of the Schmidt '717 patent is an independent claim with only slightly different wording than claim 1 of the Schmidt '717 patent. This slight difference in wording does not make claim 7 of the Schmidt '717 patent patentably distinct from either claim 1 of the Schmidt '717 patent or Almeida claim 4.

Claims 12-18 of the Schmidt '717 patent are dependent from claim 11 of the Schmidt '717 patent and fail to recite any features which would make these claims nonobvious over Almeida claim 4.

Claim 1 of the Schmidt '214 patent recites an obvious way of using the valve recited in Almeida claim 4. Claim 4 of the Almeida application recites an apparatus which is can only be used in a gas lift process, especially as recited in claim 1 of the Schmidt '214 patent. Therefore, no patentable distinction is seen between the process claim of claim 1 of the Schmidt '214 and the apparatus of claim 4 of the Almeida application. MPEP 806.05(e).

A claim for a material and may be placed into interference with a method of using the material, provided that the count recites the material and the method in the alternative. Orikasa v. Oonishi, 10 USPQ2d 1996 (Comm'r Pat. & T.M. 1989).

Claim 2 of the Schmidt '214 patent is an independent claim with only slightly different wording than claim 1 of the Schmidt '214 patent. This slight difference in wording does not make claim 2 of the Schmidt '214 patent patentably distinct from either claim 1 of the Schmidt '214 patent or Almeida claim 4.

Claim 3 of the Schmidt '214 patent is an independent claim with only slightly different wording than claim 1 of the Schmidt '214 patent. This slight difference in wording does not make claim 3 of the Schmidt '214 patent patentably distinct from either claim 1 of the Schmidt '214 patent or Almeida claim 4.

Claim 4 of the '214 Schmidt patent recites the same invention as claim 1 of the Schmidt '717 patent. No difference is seen between the "system" of claim 4 of the '214 Schmidt patent and the "device" of claim 1 of the Schmidt '717 patent. The "system" of claim 4 of the '214 Schmidt patent is obvious from the apparatus recited in Almeida claim 4.

Claim 5 of the Schmidt '214 patent is an independent claim with only slightly different wording than claim 4 of the Schmidt '214 patent. This slight difference in wording does not make claim 5 of the Schmidt '214 patent patentably distinct from either claim 4 of the Schmidt '214 patent or Almeida claim 4.

INSTRUCTION 8

Pursuant to instruction 8 on Form PTO-850, there are no claims not to be designated as corresponding to the count.

INSTRUCTION 9

Pursuant to instruction 9 on Form PTO-850, there are no additional counts.